



State of Utah

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Department of Administrative Services

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ADDENDUM

Date: 24 January 2006

To: Contractors

From: Jeff Reddoor, Project Manager, DFCM

Reference: Division of Parks and Recreation
Goblin Valley State Park

DFCM Project #: 04255510

Subject: **Addendum No. 1**

Pages	Addendum	1 page
	<u>Architects Attachment</u>	<u>26 pages</u>
	Total	27 pages

Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

1.1 Reference the attached addendum information and specifications.

End of Addendum



January 24, 2006

ADDENDUM #1

Goblin Valley Visitor Center and Restroom Facility
Goblin Valley Road, West of State Route #24
Emery County, Utah

DFCM Project # 04255510

The original Drawings and Project Manual, dated December 29, 2005 for the above referenced project are hereby amended as noted in this Addendum No. 1.

This addendum consists of multiple pages at 8 ½" x 11" sizes.

Bidders must acknowledge receipt of this addendum in their bids, and attach a copy of the appropriate sheets of this addendum where bid amounts are requested. Failure to acknowledge receipt of this Addendum #1 may result in disqualification of the Contractor's bid.

The date for bid submittal remains unchanged.

Questions regarding the content of this Addendum should be promptly directed to the Architect.

Following is a list of items included in this Addendum #1:

1. Specification Section #07530 for single ply membrane roofing is attached.
2. Asphalt paving is to consist of 3" of asphalt over 8" of base course. Area of new paving is as shown on the drawings, and is approximately 600 square feet. All fill material is available for use by the contractor. Fill must be transported and placed to meet 95% compaction. Fill material is within approximately 50 miles of the site and is stored at a UDOT facility. Fill material from this source consists of old road base gravel. Contractor shall include fill to bank along the sides of the new paving to transition to existing slopes at a 3 to 1 slope. Contractor shall remove and dispose of existing topsoil in the areas where fill is being placed.

3. Contractors will be permitted to camp at the Goblin Valley Campground at no additional fee. Contractors camping at this facility shall be responsible for the good behavior of their employees, who shall respect the rights of the public accessing the park during the construction period.
4. Clarifications and corrections for the door hardware on sheet A-601 of the Visitor Center:
 - a. Change locksets on door Groups #1, #2, and #5 to "AL70SAT Rhoads, heavy duty
 - b. Change lockset on door Group #3 to D40S Rhoads, heavy duty
5. Corrections and clarifications for the door hardware schedule on sheet A-601 of the Restroom Facility:
 - a. Change "Deadlatch" category to "Privacy Lock" (for showers)
6. On sheet A-201 of the Visitor Center, delete the words "Additive Alternate #B" on the north building elevation, where the galvanized corrugated steel siding is identified.
7. Power to both buildings is being supplied via a feeder by the Owner to the panels installed by the contractor. Contractor shall coordinate the placement of panels and the construction sequencing to allow for the underground installations of power feeds by the Owner to the contractor supplied panels.
8. Light fixture type 'G' in the Visitor Center is to be equal to: OCL #ODAA-12-PA-W-2DP-2, with 2-26WQD.

End of Addendum #1.

Section 07530 - Single Ply Membrane Roofing

Part 1 - General

1.01 System Description

- A. Mechanically attached heat-welded thermoplastic sheet roof membrane system (TPO).
- B. Products listed within are minimum standard. Equal products will be permitted after review and approval.

1.02 Regulatory Requirements

- A. Conform to all applicable buildings and jurisdictional codes, including roof assembly wind uplift and fire resistance requirements and slope.
- B. Follow local jurisdiction requirements for disposing of used and expired adhesives and sealants.

1.03 Delivery, Storage and Protection

- A. Deliver products to site in original containers with seals unbroken and labeled with manufacturers' name, product brand name, and type.
- B. Store materials in weather-protected environment, clear of ground and moisture, in accordance with EverGuard® or GAF instructions.
- C. All materials stored outside shall be raised above ground or roof level on pallets and covered with a tarpaulin or other waterproof material.
 - 1. Factory-installed plastic wrapping is not an adequate covering.
 - 2. Extreme heat conditions may require special storage requirements.
 - 3. Contact EverGuard Contractor Services for suggestions.
- D. Follow EverGuard or GAF directions and requirements for protection of materials prior to and during installation.
- E. Materials that are wet or damaged to the extent that they will no longer serve their intended purpose shall not be used.

1. All roof insulation that has been wet is considered damaged, even if later dried out.
2. Remove all damaged materials from the jobsite.

1.04 Environmental Requirements and Restrictions

- A. Do not apply roofing materials during inclement or threatening weather.
- B. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during the same day.
- C. When ambient temperatures are below 40° F, follow Manufacturer's cold weather application procedures.
- D. Material installation during periods of high ambient temperatures, typically above 90° F, can result in poor installation quality due to condensation on the membrane surface and excessively fast adhesive drying rates.
- E. Material installation during periods of low ambient temperatures, typically below 30° F, can result in poor installation quality due to increased material stiffness and vulnerability to damage and excessively slow adhesive drying rates.
 1. To avoid these problems:
 - a. Store materials in a warming box.
 - b. Use as soon as possible.
 - c. Allow adhesives to properly cure.
 - d. Use a weighted lawn roller over membrane.

1.05 Working Environment

- A. Provide a safe working environment, including, but not limited to, adequate fall protection, restriction of unauthorized access to the work area, and protection of the building and its occupants.
- B. Safe work practices should be followed, including, but not limited to, keeping tools in good operating order, providing adequate ventilation if adhesives are used, and daily housekeeping to remove debris and other hazards.

Part 2 – Products

2.01 45 Mil Fleece-Back Membrane

- A. EverGuard TPO (smooth reinforced) thermoplastic polyolefin membrane.
- B. EverGuard TPO membranes are optional flashing membranes for all EverGuard TPO roofing systems.
 - 1. These membranes may be a solution when a contaminated substrate is encountered.

2.02 Flashing Accessories

- A. EverGuard preformed flashing accessories to be of same type as roofing membrane.
 - 1. Everguard TPO laminated metal flashings to be a minimum of 25 mils of non-reinforced thermoplastic membrane of same type as roofing membrane, laminated to 25 ga. galvanized steel sheet metal.
 - 2. Pre-formed Vent Boots with stainless steel clamping bands.
 - 3. Pre-formed Universal Corners for reinforcement of inside and outside corners.
 - 4. Pre-formed Expansion Joint Covers for roof-roof and roof-wall expansion joints.
 - 5. Membrane Flashing Strips for miscellaneous applications.
 - 6. UN-55 Detailing Membrane for flashing of miscellaneous penetrations.
 - 7. EverGuard TPO Cover Strip for stripping-in of flat metal edges.
 - 8. EverGuard 6" RTS Strip.

2.03 Fasteners

- A. DRILL•TEC membrane fasteners and plates, insulation fasteners and plates, and flashing fasteners and termination bars.

2.04 Adhesives and Sealants

- A. EverGuard bonding adhesives, sealants, and caulking.

1. Everguard TPO Bonding Adhesive (solvent-based).
2. EverGuard H2O Bonding Adhesive (low VOC).
3. Everguard 2-Part Pourable Sealant for use in coated metal sealant pans.
4. EverGuard Caulking for use in sealing termination bars and penetration clamping bands.
5. EverGuard TPO Cut Edge Sealant.
6. EverGuard Water Block for use in sealing behind termination bars and at drain flanges as a water cut-off.
7. EverGuard TPO Primer.

2.05 Insulation

- A. EnergyGuard™ foam insulation of the following types:
 1. Minimum 1" thickness.
 2. Board size to be 4' x 8' panels for mechanical attachment and 4' x 4' for adhered attachment and tapered systems.
 - a. EnergyGuard and EnergyGuard Ultra polyisocyanurate insulation with glass-based facer meeting or exceeding the requirements for ASTM C-1289 (min. 16 psi compressive strength).
 - b. EnergyGuard expanded polystyrene insulation with plastic facer meeting or exceeding the requirements for ASTM D-578, Type II (min. 15 psi compressive strength).

2.06 Insulation – High Traffic Applications

- A. EnergyGuard foam insulation of the following types:
 1. Minimum 1" thickness.
 2. Board size to be 4' x 8' panels for mechanical attachment and 4' x 4' for adhered attachment and tapered systems.
 - a. EnergyGuard and EnergyGuard Ultra polyisocyanurate insulation with glass-based facer

meeting or exceeding the requirements for ASTM C-1289 (min. 25 psi compressive strength).

- b. EnergyGuard extruded polystyrene insulation meeting or exceeding the requirements for ASTM D-578, Type IV (min. 25 psi compressive strength).
- b. EnergyGuard expanded polystyrene insulation with plastic facer meeting or exceeding the requirements for ASTM D-578, Type IX (min. 25 psi compressive strength).

2.07 Base Sheets

- A. GAFGLAS® Stratevent® Eliminator™ Nailable Base Sheet.

2.08 Protection Layer

- A. EverGuard Polymat slipsheet, 3.0 oz/sq. yd.

2.09 Other Accessories

- A. Subject to compliance with requirements, provide the following products not available from EverGuard or GAF:
 - 1. *Wood Nailers:* New wood nailers shall be pressure-treated for rot resistance, #2 or better lumber.
 - i. Asphaltic or creosote-treated lumber is not acceptable.
 - 2. *Roofing Nails:* Galvanized or non-ferrous type and size as required to suit application.
 - 3. *Temporary Sealant:* Polyurethane foam sealant or similar as required to provide temporary watertight sealing of roofing.
 - 4. *Air/Vapor Barrier:* Polyethylene sheeting, min. 6 mil. For TPO only.

Part 3 – Execution

3.01 Site Conditions

- A. Obtain verification that the building structure can accommodate the added weight of the new roofing system.
- B. Confirm the adequacy of the new roofing system to provide positive slope to drain.

1. Eliminate ponding areas by the addition of drainage locations or by providing additional pitch to the roof surface.
- C. All defects in the roof deck or substrate shall be corrected by the responsible parties before new roofing work commences.
 1. Verify that the deck surface is dry, sound, clean and smooth, and free of depressions, waves, or projections.
- D. Protect building surfaces against damage and contamination from roofing work.
- E. Where work must continue over completed roof areas, protect the finished roofing system from damage.
- F. Deck preparation is the sole responsibility of the building owner or roofing contractor.
 1. All defects in the roof deck or substrate shall be corrected before roofing work commences.

3.02 Preparation of Roofing Area

- A. Confirm quality and condition of roof decking by visual inspection and by fastener pull-out testing.
- B. Secure all loose decking.
 1. Remove and replace all deteriorated decking.
- C. Confirm that height of equipment supports will allow the installation of full-height flashings.

3.03 Wood Nailer Installation

- A. **Acceptable Material**
 1. *Solid Blocking:*
 - a. Pressure-treated wood, #2 Grade or better, nominal 5/4" x 4" minimum; stagger multiple layers.
 2. *Shim Material:*
 - a. Pressure-treated plywood, 1/2" x width to match solid blocking.
- B. **New Nailers:**

1. Anchor to resist 250 lb. per ft. load applied in any direction.
 - a. DRILL•TEC HD screws 18” on center attachment to structural wood, steel decks.
 - i. Min 1” thread embedment.
 - b. DRILL•TEC spikes 18” on center attachment to concrete decks.
 - i. Min 1” shank penetration.
 - c. Polymer screws 12” on center attachment to gypsum concrete, cellular concrete, cementitious wood fiber decks.
 - i. Min 1 ½” thread embedment.
 - d. Three anchors per length of wood nailer minimum.

3.04 Air/Vapor Barrier Installation

A. General:

1. Air/vapor barrier sheet shall typically be installed when required by design professional to address internal building air pressure or humidity conditions.
2. Insulation must be installed over the air/vapor barrier sheet and mechanically attached to the deck.

B. Application:

1. Install air/vapor barrier sheet loose-applied to the deck or fire barrier board so that wrinkles and buckles are not formed.
2. Overlap air/vapor barrier sheet a minimum of 6” for side and end laps.
 - a. Tape laps together with duct tape or double sided tape.
3. Seal perimeter and penetration areas with foam sealant.

3.05 Protection Layer Installation – Polyester

A. General:

1. Polymat protection layer shall be installed between the roofing membrane and the substrate in accordance with the Design table.
2. Overlap polymat protection layer a minimum of 6” for side and end laps.

3.06 Base Sheet Installation

A. General:

1. Fiberglass base sheet shall typically be installed over all nailable substrates other than gravel-surfaced built-up roofing whenever installation, recover board, or fire barrier board is installed in hot asphalt or adhesive.
2. Nailable base sheet shall be applied over substrates that are not suitable for asphalt adhesion.
 - a. Requires installation of insulation in hot asphalt or adhesive.
3. Install base sheet so that wrinkles and buckles are not formed.
4. Overlap base sheet a minimum of 2” for side laps and 6” for end laps.

B. Mechanical Securement – Nailable Base Sheet

1. Secure venting nailable base sheet through existing substrate to the deck.
 - a. Use appropriate type and length of approved fastener for structural deck type and install required number of fasteners in accordance with manufacturer.
2. Install fasteners such that the fastener plate is pulled flush with the venting base sheet surface and lies flat on the deck.

3.07 Membrane Installation

A. Placement

1. Place roof membrane so that wrinkles and buckles are not formed.

- a. Any wrinkles or buckles must be removed from the sheet prior to permanent securement.
 - b. Roof membrane shall be mechanically fastened after it is rolled out, followed by welding to adjacent sheets.
2. Full-width rolls shall be installed in the field of the roof.
3. Half-width rolls shall be installed in the perimeter region of the roof.
4. Overlap roof membrane a minimum of 5" for side laps of mechanically attached systems and a minimum of 3" for end laps.
 - a. Membranes are provided with a lap line along the side laps.
 - i. The inside line is for mechanically attached system overlaps (6" for TPO) and the other line is for adhered and ballasted systems overlap.
5. Install membrane so that the laps run across the roof slope lapped towards drainage points.
 - a. On metal decking, install sheets perpendicular to deck direction so that fasteners will penetrate the top flanges and not the flutes.
6. All exposed sheet corners shall be rounded a minimum of 1"
7. Overlap roof membrane a minimum of 3" for end laps of TPO membranes.
 - a. End laps for EverGuard fleece-back membranes are made by butting adjacent sheets and heat welding an 8" wide TPO reinforced membrane flashing strip over the joints.

B. Securement:

1. Roof membrane shall be mechanically fastened in the side lap area to the roof deck with fasteners and plates of a type and spacing appropriate to the deck type and as required.
2. The metal plates must be placed with $\frac{1}{4}$ " – $\frac{3}{4}$ " of the membrane edge.

- a. Plates must not be placed closer than ¼” to the membrane edge.
3. Fasteners must be installed to achieve the proper embedment depth.
 - a. Install fasteners vertical to the deck without lean or tilt.
4. In the corner regions, additional fasteners will also be installed through the perimeter half-width membrane rolls to form a grid pattern with an 8” wide reinforced membrane flashing strip heat-welded over the additional fasteners.
 - a. Corners include both outside and inside corners that measure 75-105 angle degrees.
5. Mechanically attach membrane with screws and plates to the roof deck at locations of deck angle changes in excess of 5 angle degrees (1” in 12”).
6. Membrane may be heat welded to coated metal flanges.
 - a. Membrane must be secured to the roof deck with 6” of the base of walls and curbs, at the perimeter, and all penetrations with DRILL•TEC Fasteners and Plates of a type and spacing in accordance with in-lap attachment requirements with a 12” on-center maximum spacing.
 - b. Alternatively, membrane may be extended vertically 3” up walls and curbs and secured to the wall/curb substrate within 2” of the plane of the roof with DRILL•TEC Fasteners and inverted Termination Bar of type and spacing in accordance with in-lap attachment requirements with a 12” on-center maximum spacing.
 - c. This detail is required to be used for pressurized buildings.
7. Install fasteners so that the plate is drawn down tightly to the membrane surface.
 - a. Properly installed fasteners will not allow the plate/termination bar to move (underdriving), but will not cause wrinkling of the membrane (overdriving).

C. Field Seaming

1. Fabricate field seams using a current-generation automatic hot air welding machine and a 10,000 watt voltage-controlled generator minimum.
 - a. Outdated welding equipment and inadequate/fluctuating electrical power are the most common cause of poor seam welds.
2. Equipment Settings: The correct speed and temperature settings for automatic welders are determined by preparing test welds at various settings.
 - a. The welds are tested by application of pressure causing the seam to peel apart.
 - b. A satisfactory weld will fail by exposing the scrim reinforcement called a “film tearing bond.”
 - c. A deficient weld fails by separating between the two layers of the membrane.
3. Adjustments to Equipment Settings: Many factors will affect the settings: thicker membranes, lower air temperatures, and overcast skies will generally require a slower speed than would be required with thinner membranes, higher air temperatures, and sunny skies.
 - a. The slower speed provides additional heat energy to compensate for heat-draining conditions.
 - b. The test weld procedure should be conducted at the beginning of every work period (i.e., morning and afternoon) and following a significant change in weather (i.e., air temperature, wind speed, cloud cover).
4. Membrane laps shall be heat-welded together.
 - a. All welds shall be continuous, without voids or partial welds.
 - b. Welds shall be free of burns and scorch marks.
5. Weld width shall be a minimum 1 ½” in width for automatic machine welding.
 - a. Weld width shall be a minimum 2” in width for hand welding.

6. All cut edges of TPO reinforced membrane must be sealed with EverGuard® TPO Cut Edge Sealant.

D. Substrate Surface Preparation:

1. Prepare substrate surfaces thoroughly prior to application of new roofing materials.
 - a. This is particularly important for recover and re-roofing applications.
2. Preparation includes, but is not limited to, removal of existing flashings, replacement of wet/damaged existing roofing materials, removal of loose aggregate, removal of abandoned equipment, supports and penetrations, replacement of damaged decking, etc.
3. Providing a smooth, even, sound, clean and dry substrate minimizes the likelihood that underlying deficiencies will cause premature deterioration or even failure of the new roofing system.

E. Membrane Surface Preparation:

1. Membrane must be clean of dirt and contaminants, and free from dew, rain, and other sources of moisture.
 - a. Factory-fresh membrane typically will not require cleaning prior to automatic welding, provided that welding is performed immediately after placement and securement of the membrane.
2. Membrane that has been exposed for over 12 hours or has become contaminated will require additional cleaning methods.
3. Light Contamination: Membrane that has been exposed overnight up to a few days to air-borne debris, foot traffic, or dew or light precipitation can usually be cleaned with a white cloth moistened with EverGuard TPO Cleaner.
 - a. Be sure to wait for solvent to flash off prior to welding.
4. Dirt-Based Contamination: Membrane that is dirt-encrusted will require the use of a low-residue cleaner such as Formula 409 and a mildly abrasive scrubbing pad to remove the dirt.

- a. This must be followed by cleaning with a white cloth moistened with EverGuard TPO Cleaner.
 - b. Be sure to wait for solvent to flash off prior to welding.
5. Exposure-Based Contamination: Membrane that is weathered/oxidized will require the use of EverGuard TPO Cleaner and a mildly abrasive scrubbing pad to remove the weathered/oxidized top surface layer.
 - a. This must be followed by cleaning with a white cloth moistened with EverGuard TPO Cleaner.
 - b. Unexposed membrane left in inventory for a year or more may need to be cleaned as instructed above.
 - c. Be sure to wait for solvent to flash off prior to welding.
6. Chemical-Based Contamination: Membrane that is contaminated with bonding adhesive, asphalt, flashing cement, grease and oil, and most other contaminants usually cannot be cleaned sufficiently to allow an adequate heat weld to the membrane surface.
 - a. Removal and replacement of the membrane is indicated in these situations.

3.08 Flashing Installation

A. General:

1. Flash all perimeter, curb, and penetration conditions with coated metal, membrane flashing, and flashing accessories as appropriate to the site condition.
2. All coated metal and membrane flashing corners shall be reinforced with pre-formed corners or unreinforced membrane.
3. Heat weld all flashing membranes, accessories, and coated metal together to achieve a minimum 2" wide (hand welder) weld.
4. All cut edges of reinforced TPO membrane must be sealed with EverGuard® TPO Cut Edge Sealant.
5. When using bonding adhesive, be sure to use adhesive specific to membrane type.
6. Minimum flashing height is 8".

B. Coated Metal Flashings:

1. Coated metal flashing allows much of the metal-work used in typical roofing applications to benefit from the security of heat-welded membrane seaming, with a corresponding reduction in required metalwork maintenance during the life of the roofing system.
 - a. Coated metal is required to be used in extended length guarantees.
2. Coated metal shall be formed in accordance with construction details and SMACNA guidelines.
3. Coated metal sections used for roof edging, base flashing, and coping shall be butted together with a ¼" gap to allow for expansion and contraction.
 - a. Heat weld a 6" wide membrane flashing strip to both sides of the joint, with approximately 1" on either side of the joint left unwelded to allow for expansion and contraction.
 - b. 2"-wide aluminum tape can be installed over the joint as a bond-breaker to prevent welding in this area.
4. Coated metal used for sealant pans and scupper inserts, and corners of roof edging, base flashing, and coping shall be overlapped or provided with separate metal pieces to create a continuous flange condition, and pop-riveted securely.
 - a. Heat weld a 6" wide reinforced membrane flashing strip over all seams that will not be sealed during subsequent flashing installations.
5. Coated metal base flashings must be provided with min. 4" wide flanges nailed to pressure-treated wood nailers.
 - a. Coated metal base flashings must be formed with a 1" cant.
6. Provide a ½" hem for all exposed metal edges to provide corrosion protection and edge reinforcement for improved durability.

7. In addition, provide a ½” hem for all metal flange edges whenever possible to prevent wearing of the roofing and flashing membranes at the flange edge.
8. Coated metal flashings are nailed to treated wood nailers or otherwise mechanically attached to the roof deck, or to the wall or curb substrate, in accordance with construction detail requirements.

C. Adhered Reinforced Membrane Flashings – Smooth Surface:

1. The thickness of the flashing membrane shall be the same as the thickness of the roofing membrane.
2. When using EverGuard TPO adhesives, use any one of the following substrates: polyisocyanurate insulation (w/o foil facer), high density wood fiber board, Dens Deck, Dens Deck Prime, Dens Guard, cured structural concrete absent of curing and sealing compound, untreated OSB, untreated CDX plywood, Type X gypsum board, and dry, sound masonry absent of curing or sealing compounds.
3. Solvent-Based Bonding Adhesives: Apply bonding adhesive to both the substrate surface and the underside of the flashing membrane, at the rate of 120 sq. ft./gal. which covers both surfaces yielding 60 square feet of finished, mated surface per gallon.
 - a. Solvent-based adhesive must be allowed to dry until tacky to the touch before mating flashing membrane.
4. Water-Based Bonding Adhesive: Apply bonding adhesive at the rate of 200 sq. ft./gal. which covers both surfaces yielding 100 square feet of finished, mated surface area per gallon.
 - a. Water-based adhesive must be allowed to dry completely to the touch with installation of the flashing completed within one hour of drying.
5. Apply the adhesive only when the outside temperature is above 40° F with recommended minimum application temperature of 50°F which allows easier adhesive application.
6. All laps in EverGuard smooth-reinforced flashing membrane shall be heat welded in accordance with heat welding guidelines.

7. Porous substrates may require double application of adhesive.
8. For extended guarantee lengths, separate counterflashing or cap flashing is required; exposed termination bars are not acceptable.

D. Adhered Reinforced Membrane Flashings – Fleece Back

1. Apply bonding adhesive to the substrate at the rate of 60 sq. ft./gal. for solvent-based adhesive and at a rate of 100 sq. ft./gal. for water-based adhesive.
2. The bonding adhesive must remain wet to the touch for one surface application.
3. Apply the adhesive only when the outside temperature is above 40° F with recommended minimum application temperature of 50°F which allows easier adhesive application.
4. All selvage edge laps in EverGuard Fleece-Back flashing membrane shall be heat welded in accordance with heat welding guidelines.
 - a. Lap width is 3”.
5. Non-selvage edge laps in EverGuard Fleece-Back flashing membrane are made by butting adjacent sheets and heat welding an 8” wide strip of EverGuard TPO flashing membrane over joint.
6. For extended guarantee lengths, separate counterflashing or cap flashing is required; exposed termination bars are not acceptable.

E. Loose Reinforced Membrane Flashing

1. For extended guarantee lengths, separate counterflashing or cap flashing is required; exposed termination bars are not acceptable.
2. Carefully position the EverGuard smooth reinforced flashing membrane prior to application to avoid wrinkles and buckles.
3. All laps in Everguard smooth reinforced flashing membrane shall be heat welded in accordance with heat welding guidelines.

4. Maximum flashing height is 18” unless incremental attachment is used.

F. Unreinforced Membrane Flashings

1. Unreinforced membrane is used as a field-fabricated penetration/reinforcement flashing only where pre-formed corners and pipe boots cannot be properly installed.
2. Penetration flashings constructed of unreinforced membrane is typically installed in two sections: a vertical piece that extends up the penetration and a horizontal piece that extends onto the roofing membrane.
 - a. The two pieces are overlapped and heat-welded together.
3. The unreinforced vertical membrane flashing shall be adhered to the penetration surface.
 - a. Solvent-Based Adhesives: Apply bonding adhesive to both the penetration surface and the underside of the flashing membrane at the rate of 120 sq.ft./gal. which covers both surfaces yielding 60 square feet of finished, mated surface area per gallon.
 - b. Water-Based Bonding Adhesives: Apply bonding adhesive to both the penetration surface and the underside of the flashing membrane at the rate of 200 sq. ft./gal. covering both surfaces yielding 100 square feet of finished, mated surface area per gallon.
 - c. Coverage rates will vary depending on substrate.
 - d. Solvent-based adhesive must be allowed to dry until tacky to the touch before flashing membrane application.
 - e. Water based adhesive must be allowed to dry completely to the touch; install the flashing within one hour of drying.

G. Roof Edging

1. Roof edge flashing is applicable for both gravel stop/drip edge conditions as well as exterior edges of parapet walls.

2. Flash roof edges with coated metal flanged edging with minimum 3" wide flange nailed 4" on center to pressure-treated wood nailers and heat weld roof membrane to metal flanges.
3. Coated metal roof edging must be provided with a continuous metal hook strip to secure the lower fascia edge if the fascia width is 4" or greater.
 - a. The continuous hook strip must be secured to the building a minimum of 12" on center.
4. Alternatively, flash roof edges with a 2-piece snap-on fascia system, adhering roof membrane to metal cant with bonding adhesive and face nailing the membrane 8" on center prior to installing the snap-on fascia.
5. Galvanized metal edging may be flashed using EverGuard TPO Self-Adhering Cover Strip after priming both the metal and the TPO membrane for guarantee lengths up to 15 years.
 - a. Allow approximately 2" of tape to cover the metal edge with the remaining 3" of tape onto the TPO membrane.
 - b. Caulk the back edge of the tape with EverGuard Caulking when slope exceeds 1" in 12".
6. Flash roof edge scuppers with a scupper insert of coated metal that is mechanically attached to the roof edge and integrated as part of the metal edging.

H. Parapet and Building Walls

1. Flash walls with membrane flashing adhered to the wall substrate with bonding adhesive or with coated metal flashing fastened 4" on center to pressure-treated wood nailers.
2. Secure membrane flashing at the top edge with a termination bar.
 - a. Water Block shall be applied between the wall surface and membrane flashing underneath all termination bars.

- b. Exposed termination bars shall be mechanically fastened 6" on center.
 - c. Termination bars that are counterflashed shall be fastened 12" on center.
- 3. Roof membrane must be mechanically attached along the base of walls that are flashed with membrane flashing with screws and plates/termination bar at a fastener spacing in accordance with in-lap attachment requires with a 12" on center maximum spacing.
- 4. All coated metal wall flashings and loose membrane flashings must be provided with separate metal counterflashings or metal copings.
- 5. Metal counterflashings may be optional with fully adhered membrane wall flashings depending on guarantee duration.
 - a. All termination bars must e sealed with caulking.
- 6. Flash wall scuppers with a scupper insert of coated metal that is mechanically attached to the wall and integrated as part of the wall flashing.
 - a. Refer to scupper section.
- 7. Maximum flashing height without intermediate fastening:
 - a. 18" – Loose-Applied Flashing
 - b. 54" – Adhered Flashing.

I. Round and Square Tube Penetrations

- 1. Flash penetrations with pre-formed vent boots provided that the penetrations are accessible from the top.
 - a. Otherwise, field-fabricate flashing with two-piece field fabricated flashings of unreinforced membrane.
- 2. All flashings require the installation of a stainless steel draw band around the top of the flashing.
 - a. Seal the top edge with water block and add draw band with caulking.
- 3. Roof membrane must be mechanically attached at the base of each penetration with screws and plates a maximum of

12” on center, with a minimum of four fasteners per penetration.

J. Irregularly-Shaped Penetrations

1. Flash irregularly shaped penetrations with flanged sealant pans formed of coated metal, secured to the deck through the roof membrane with screws 6” on center, a minimum of two per side.
2. Strip in metal flanges and the vertical pop riveted seam with 8” wide membrane flashing strips heat welded to both the roof membrane and the metal flanges.
3. Fill sealant pans with EverGuard 2-part pourable sealant.
 - a. Alternatively, fill sealant pans with non-shrink quick-set grout and top off sealant pans with a 2” minimum thickness of EverGuard 2-part pourable sealant.

K. Curbs and Ducts

1. Flash curbs and ducts with membrane flashing adhered to the curb substrate with bonding adhesive or with coated metal flashing nailed 4” on center to pressure-treated wood nailers.
2. Secure membrane flashing at the top edge with a termination bar.
 - a. Water Block shall be applied between the curb/duct surface and membrane flashing underneath all exposed termination bars.
 - b. Exposed termination bars shall be mechanically fastened 6” on center.
 - c. Termination bars that are counterflashed shall be fastened 12” on center.
3. Roof membrane must be mechanically attached along the base of curbs and ducts that are flashed with membrane flashing with screws and plates/termination bar at a fastener spacing in accordance with in-lap attachment requirements, with a 12” on center maximum spacing.
4. All coated metal curb flashings and loose membrane flashings must be provided with separate metal

counterflashings, metal copings, or flashed with equipment flanges.

5. Metal counterflashings may be optional with fully adhered membrane curb and duct flashings depending on guarantee duration.
 - a. All termination bars must be sealed with caulking.

L. Expansion Joints

1. Install prefabricated expansion joint covers at all flat type and raised cant/curb type expansion joint conditions.
 - a. All metal nailing strips must either be nailed to pressure-treated wood nailers, cants or curbs, or secured to walls with screws or expansion anchors appropriate to substrate type.
2. Roof membrane must be mechanically attached along the base of raised cant/curb expansion joints with screws and plates a minimum of 12" on center.
3. Expansion joint bellows must be twice the width of the expansion joint opening to allow for proper expansion/contraction.
4. Metal nailing strip must be set in water block and secured with fasteners and neoprene washers fastened 6" on center.

3.09 Traffic Protection

- A. Install walkway pads/rolls at all roof access locations including ladders, hatchways, stairs and doors, and other designated locations including roof-mounted equipment work locations and areas of repeated rooftop traffic.
- B. Walkway pads must be spaced 2" to allow for drainage between the pads.
- C. Fully adhere walkway pads/rolls to the roof membrane with solvent-based bonding adhesive, applied at the rate of 1 gal. per 120 sq. ft. to both the walkway and roof membrane surfaces.
 1. Press walkway in position once adhesive is tacky to the touch.

2. Finish by placing a bead of caulk around the entire walkway pad or roll.
- D. Alternatively, heat weld walkway pads/rolls to the roof membrane surface continuously around the walkway pad perimeter.
- E. TPO Walkway pads may be also be installed with TPO primer and 3" seam tape.
1. First, roll or brush the TPO primer on the back of the TPO pad along the edges and down the middle of length of the pad.
 2. Clean and prime the roof membrane where the pad will be installed.
 3. Install tape to the back of the pad where cleaned (edges and middle) and roll in with a silicone hand roller.
 4. Remove the release paper and install the taped pads directly onto the roof membrane.
 5. Secure the pads by rolling into place.

3.10 Temporary Closures

- A. The roofing installation must be made watertight at the end of each day's activity to prevent water infiltration into the completed roofing system installation.
- B. Complete all flashings and terminations as the roofing installation progresses.
- C. At the edge of the completed roofing system installation, extend the roofing membrane a minimum of 6" beyond the edge.
1. Seal the roofing membrane to the surrounding deck or substrate surface with hot asphalt or foam sealant.
- D. Remove all temporary night seal materials prior to continuing with the roof installation and dispose of properly.

3.11 Field Quality Control

- A. Inspect completed roof sections on a daily basis.

1. It is the contractor's responsibility to probe all heat-welded seams and perform an adequate number of seam cuts to ascertain seam consistency.
- B. Immediately correct all defects, irregularities, and deficiencies identified during inspections.
- C. Remedial work shall be performed with like materials and in a manner consistent with the balance of the roofing installation so as to minimize the number of repair patches.
- D. Excessive patchwork will require replacement of the entire affected membrane section, from lap to lap.

3.12 Cleaning

- A. Remove bonding adhesive, bituminous markings and other contaminants from finished surfaces.
 1. In areas where finished surfaces are soiled by asphalt or any other source of soiling caused by work of this or other sections, consult manufacturer of surfaces for cleaning advice and conform to those instructions.
- B. Cut out and remove any sheet membrane contaminated with solvent-based adhesive, bituminous markings, and other contaminants from finished surface.
 1. Repair sheet damage by first cleaning the area with an all-purpose cleaner, then rinse off soapy residue.
 2. Reactivate membrane using the appropriate EverGuard cleaner, wiping with a damp (not saturated) rag.
 3. Complete repair by installing a patch of like material to specific system requirements.

3.13 Maintenance

- A. Upon completion of the roofing system, provisions should be made to establish a semi-yearly inspection and maintenance program in accordance with standard good roofing practice guarantee requirements.
- B. Repair cuts, punctures and other membrane damage by cleaning membrane with EverGuard TPO Cleaner, followed by heat welding a membrane repair patch of sufficient size to extend a minimum of 2" beyond the damaged area.

- C. Any damage to adhered membrane areas or at locations of mechanical attachment shall be repaired so that the repaired area remains fully adhered or mechanically attached.

End of Section 07530